

(12)

$$(2, 18) \quad (5, 60.75)$$

$$y = ab^x$$

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$$60.75 = \frac{18}{b^2} \cdot b^{\frac{3}{5}}$$

$$\frac{18}{b^2} = a \frac{b^2}{b^2}$$

$$\frac{60.75}{18} = \frac{18b^3}{18}$$

$$\frac{18}{b^2} = a$$

$$\sqrt[3]{3.375} = \sqrt[3]{b^3}$$

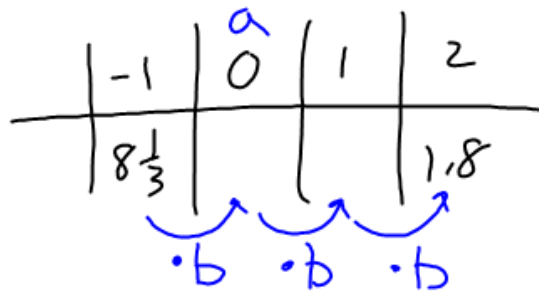
$$\underline{\underline{b = 1.5}}$$

$$\frac{18}{1.5^2} = a$$

$$\underline{\underline{a = 8}}$$

$$\boxed{\begin{array}{l} y = ab^x \\ y = 8(1.5)^x \end{array}}$$

(13) $(-1, 8\frac{1}{3})$ $(2, 1.8)$



$$y = ab^x$$

$$y = \frac{8.\overline{33}}{8.\overline{33}} \cdot b^3 = \frac{1.8}{8.\overline{33}}$$

$$b^3 = 0.216$$

$$\sqrt[3]{} \quad \sqrt[3]{}$$

$$b = 0.6$$

$$8.\overline{33} \cdot 0.6 = a$$

$$a = 5$$

$$y = ab^x$$

$$y = 5(0.6)^x$$

(54)

22% \rightarrow growth
rate34 million \rightarrow start

$$y = ab^x$$

$$y = a(1+r)^x$$

$$y = 34(1+0.22)^x$$

- Invest \$2000 at 4% ^{APR} for 5 years. Write equation, find value.

$$y = ab^x \quad b = 1 + r$$

$$y = a(1 + r)^x$$

$$y = 2000(1 + 0.04)^5$$

$$= 2433.31$$

- Compounding monthly

$$y = 2000 \left(1 + \frac{0.04}{12} \right)^{12 \cdot 5}$$

$$y = 2441.99$$

- Compounded daily

$$y = 2000 \left(1 + \frac{0.04}{365} \right)^{365 \cdot 5}$$

Invest \$1.⁰⁰ at 100% for 1 year, find balance if it is
(compounded)

(a) yearly = 2

(b) quarterly = 2.4414

(c) monthly = 2.61303529

(d) weekly = 2.692596954

(e) daily = 2.71456

(f) every hour = 2.718126

(g) every min. = 2.7181279

→ 2.718281828...
e - natural base

continuous compounding

$$A = Pe^{rt}$$

rate as decimal

$$y = Pe^{rt}$$

years

initial investment

2000 at 8% APR compounded continuously for 10 years

$$y = Pe^{rt}$$

$$y = 2000e^{0.08 \cdot 10}$$

HW

Exponential Modeling Handout